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# INDOT 2030 Long Range Plan

## Air Quality Issues

### Overview

The Clean Air Act Amendments of 1990 (CAAA), Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) have combined to alter the environment in which transportation and air quality decisions are made throughout the nation and in Indiana. Federal, state, and local decision-makers must now respond to a wide range of regulations, requirements, and processes for transportation system planning, development, and air quality management.

Given the magnitude of change brought about by these laws, it is critical that Indiana transportation officials understand several essential elements of the new transportation/air quality setting. The new conformity regulations place stronger constraints on transportation plans, programs, and projects, making it imperative that transportation planners work closely with air quality issues. Numerous projects in the 2030 Long Range Plan project list must pass air quality standards before they may be completed. Thus, some projects in the current listing may not be feasible due to air quality regulations.

These regulations include the following:

- The State Implementation Plan (SIP) process has a great impact on transportation, both through the establishment of emissions budgets and through the development of control strategies to reduce emissions. SIPs are plans at both the urbanized area and statewide level that are designed to achieve improved air quality and federally mandated controls and regulations.
- The CAAA has linked transportation to air quality actions—even actions directed at issues not related to mobile sources—since failure to meet the requirements of the act can lead to less transportation funds.
- Specific requirements in the CAAA are aimed at transportation directly, including measures to reduce emissions through technological improvements. Improvements may include (1) enhanced vehicle inspection and maintenance, (2) reformulated fuels, (3) alternative fuel vehicles, and (4) transportation control measures (TCMs) such as the employee commute option program in certain urbanized areas. TEA-21 funding is available for projects that benefit air quality through the Congestion Mitigation and Air Quality Improvement (CMAQ) Program.

- TEA-21 re-emphasized the relationship between transportation and air quality and strengthened the role of transportation conformity in the planning provisions of the statute. The U.S. Environmental Protection Agency (EPA) and U.S. Department of Transportation (DOT) continue to apply the conformity rule in accordance with the CAAA and TEA-21. Indiana state and local transportation and air quality agencies continue to implement the regulations to achieve both transportation and air quality goals.

The ISTEA, CAAA, TEA-21 and associated regulations emphasize the link between transportation policy and air quality concerns through (1) incentives to make investments that promote air quality and, (2) regulatory restrictions on transportation decisions in areas that fail to meet National Ambient Air Quality Standards (NAAQS). As a result, Indiana transportation decision makers face fundamental changes in what transportation services and facilities they provide, how decisions are made, and who influences these decisions.

## Transportation Air Quality Conformity

Transportation conformity is a process to ensure that federal funding and approval are given to those transportation activities that are consistent with air quality goals. The conformity regulation requires that all transportation plans and programs in non-attainment or maintenance areas conform to the State's air quality plan, known as the State Implementation Plan (SIP). It ensures that transportation activities do not worsen air quality or interfere with the purpose of the SIP, which is to attain the NAAQS. Meeting the NAAQS often requires emission reductions from mobile sources. Several types of highway emissions reduction strategies are available (and, in some regions, required) to help regions attain the standards.

In addition, the conformity regulations affect transportation planning in several critical ways. Specifically:

- State and Metropolitan Planning Organizations (MPOs) must show that Transportation Plans and Transportation Improvement Programs result in emissions levels that fall within the "emissions budget" for mobile sources specified in each non-attainment/maintenance SIP.
- Transportation Control Measures (TCMs) contained in the SIP must be included in Transportation Plans and Transportation Improvement Programs.
- Over the 25-year period of the Transportation Plans, many areas must show reductions in emissions of key pollutants, notably nitrogen oxides and volatile organic compounds.

## Failure to Meet Transportation Conformity

Failure to meet the conformity requirements can result in the expiration of the Transportation Plan and the Transportation Improvement Program (TIP) and thus halting federal funding for many transportation projects. In addition, transportation may be affected by a state's or urban area's inability to meet any of the CAAA requirements--whether or not the lack of compliance is related to transportation measures. Failure to obtain a required SIP revision approval (even if that SIP revision relates to a non-transportation issue) can result in the loss of federal transportation funds.

In order to address the clean air challenges successfully, it is crucial that Indiana transportation officials become involved in air quality early in the planning process. Transportation officials need to be actively involved in the various SIP processes, particularly in the establishment of emissions budgets, which become key constraints on future transportation plans and programs.

In addition, Indiana transportation planners need to incorporate a range of current and new players into the decision-making process, including the EPA, the Indiana Department of Environmental Management (IDEM), special interest groups, and the general public. Cooperation between all these groups is essential if Indiana is to comply with ISTEA and CAAA air quality requirements.

## Congestion Mitigation and Air Quality Program

One important element of meeting these new challenges is the Congestion Mitigation and Air Quality Program (CMAQ). Congress allocated money for the CMAQ program to be used to fund TCMs or other programs designed to implement an urbanized area's transportation/air quality plan. The CMAQ program was established to assist in achieving attainment. INDOT and the MPOs have been using CMAQ funds to support a wide variety of projects such as the implementation of vehicle inspection/maintenance (I/M) programs, public education programs, transit and congestion reduction projects. Other possible uses include using these funds to support projects that improve intermodal freight distribution activities that are justified by air quality benefits.

CMAQ projects are usually classified in one of several categories noted below:

- Transit improvements;
- Shared ride services;
- Traffic flow improvements;
- Demand management strategies;
- Pedestrian and bicycle programs;
- Vehicle inspection/maintenance (I/M) programs;
- Conversion of public fleets to alternative fuels, and;
- Public education and outreach programs.

### Indiana's Policy for the CMAQ Program

INDOT has developed a policy and procedures manual that establishes how the CMAQ Program will be administered in the State of Indiana. It is applicable to projects proposed in maintenance or non-attainment areas by either the MPOs or the State of Indiana. The Indiana CMAQ policy incorporates many aspects of the joint Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) guidance on the CMAQ program. The federal guidance is used as an ongoing source of reference. The policy also contains other elements that may be considered unique to Indiana.

Included in this policy are sections relating to: (1) the formula for suballocating funds to Indiana's non-attainment areas; (2) eligible projects; (3) project selection criteria, and; (4) the project development and submittal process. It is the intent of this policy that the parties

governed by it, INDOT, IDEM, and the MPOs, have equal status and that each will work in a cooperative spirit with the other toward meeting the objectives of this policy. Thus, the identification, selection and implementation of projects and programs for CMAQ funding is jointly carried out by INDOT, IDEM and the MPO representing the non-attainment area in which the project or program is proposed, whether state or MPO sponsored.

## Indiana 1 Hour Non-Attainment and Maintenance Area Classifications

Areas in Indiana originally fell within one of three classifications for the 1 hour standard: marginal non-attainment, moderate non-attainment, or severe non-attainment. Each non-attainment, attainment, or maintenance area classification has an associated definition and mandatory transportation provisions. The transportation provisions of the Clean Air Act as amended in 1990 for maintenance and non-attainment area classifications are identified in **Figure 5-1**.

**Figure 5-1**

Transportation Provisions of the Clean Air Act as Amended In 1990  
For Ozone Non-Attainment an Maintenance Area Classifications

### **Marginal**

- These areas exceed the ozone standard of 0.12 parts per million (ppm) by 15 percent or less (0.121 ppm up to 0.138 ppm), and are required to attain the standard within three years of enactment, specifically November 15, 1993.
- Emission inventories are completed and approved. Revised emission inventories are required at the end of each three year period until attainment.
- These areas must correct existing or previously required inspection/maintenance (I/M) programs.
- These areas will be reclassified as moderate non-attainment areas if they fail to attain the standard by the deadline, plus up to two one-year extensions.

### **Moderate**

- These areas exceed the standard by 15 percent to 33 percent (0.138 ppm to 0.160 ppm), and are required to attain the standard in six years, specifically November 15, 1996. Moderate areas must meet marginal requirements.
- In addition to meeting marginal area requirements, moderate areas have submitted SIP revisions demonstrating volatile organic compound (VOC) reductions, and a 15 percent reduction from 1990 baseline emissions, while accounting for any growth in emissions after enactment. Additional requirements for major NO<sub>x</sub> sources apply in certain areas.
- Contingency measures to be implemented if the area fails to make reasonable further progress or attain the National Ambient Air Quality Standard (NAAQS) by the attainment date; these measures are to be included in the SIP and are to take effect without further action by the State or EPA.
- These areas must adopt basic I/M programs.
- These areas will be reclassified as a serious non-attainment area if they fail to attain the standard by the deadline, plus up to two (2) one-year available extensions.

**Figure 5-1 (Continued)**

Transportation Provisions of the Clean Air Act as Amended In 1990  
For Ozone Non-Attainment Area Classifications

**Severe**

- These areas exceed the standard by 50 to 133 percent. Areas with design values from 0.189 ppm to 0.280 ppm are required to attain the standards in seventeen years, specifically November 15, 2007.
- These areas have submitted SIP revisions that identified and adopted TCMs to offset growth in emissions from growth in trips or vehicle miles of travel.
- Besides meeting moderate area requirements, these areas have to submit SIP revisions within four years of the CAAA that demonstrate VOC reductions that average 3 percent per year each consecutive three-year period beginning six years after enactment.
- These areas submitted SIP revisions establishing clean-fuel vehicle programs, mandating that certain percentages of new fleet vehicles be clean-fuel vehicles and use clean fuels within the non-attainment area, including measures to make the use of clean alternative fuels economical to clean-fuel vehicle owners.
- Beginning six years after enactment and each three-year period thereafter, the State has to submit a demonstration as to whether vehicle emissions, congestion levels, vehicle miles of travel, and other relevant parameters are consistent with those used in the SIP; if not, the State has eighteen months to submit SIP revisions that include transportation control measures (TCMs) to reduce emissions to levels consistent with SIP levels.
- The SIP shall provide for implementation of specific measures to be undertaken if the area fails to meet any applicable milestone.
- These areas must adopt enhanced I/M programs.
- Severe areas that fail to attain the standard by the deadline are subject to mandatory fees on stationary emission sources and the more stringent new source review requirements applicable to extreme areas.

Source: Clean Air Act Amendments of 1990

## Indiana 1 Hour Air Quality Non-Attainment and Maintenance Areas

Indiana currently has one air quality non-attainment area and four air quality maintenance areas for ozone. The three Indiana areas originally classified as marginal non-attainment and one area designated moderate non-attainment were reclassified maintenance attainment after the initial classifications in 1990. Although these areas are now technically attainment for ozone, the maintenance designation means they are required to perform essentially the same air quality conformity activities as marginal areas for the next twenty years. The Indianapolis Urbanized Area, the St. Joseph/Elkhart Urbanized Area, Louisville Urbanized Area, and the Evansville Urbanized Area fall under the definition of maintenance attainment areas.

As previously noted in **Figure 5-1**, marginal non-attainment areas exceed the ozone standard of 0.121 ppm and are required to meet the standard by November 15, 1993. Under ISTEA, CAAA, TEA-21 requirements, marginal non-attainment as well as maintenance attainment urbanized areas must demonstrate:

- Transportation Conformity with the SIP and;
- Contingency Measures as part of Maintenance Plans.

Indiana's air quality moderate non-attainment area that must meet Clean Air Act Amendment (CAAA) requirements under the re-instated 1-hour standard originally included Clark and Floyd counties of the Louisville Urbanized Area. This area was previously classified as moderate non-attainment since it exceeded the ozone standard of 0.138 ppm up to 0.160 ppm before the Attainment Date of November 15, 1996. However, in December 2001 the Louisville Urbanized Area was re-designated from a moderate non-attainment to a maintenance area based upon three years of clean air quality data. Under CAAA Requirements, Clark and Floyd counties of the Indiana/Louisville Urbanized area were originally required to have:

- Transportation Conformity;
- Volatile Organic Compound Reduction Plan;
- Inspection and Maintenance, and;
- Attainment Demonstration and Maintenance Plan.

Indiana's final air quality non-attainment area that must meet Clean Air Act Amendment (CAAA) Requirements includes Lake and Porter counties in the Northwest Indiana Urbanized Area. This area is currently classified as a Severe (2) Area since it exceeds the ozone standard of 0.190 ppm up to 0.280 ppm. The Attainment Date for this area is November 15, 2007. Under CAAA Requirements, Lake and Porter counties of the Northwest Indiana-Chicago Urbanized Area must have:

- Transportation Conformity;
- Reduction of Vehicle Miles Traveled;
- Clean Fueled Fleet Rule;
- Reformulated Gasoline;
- Volatile Organic Compound Reduction Plan;
- Volatile Organic Compound Reduction Plan;
- Stage II Vapor Recovery;
- Enhanced Inspection and Maintenance, and;
- Attainment Demonstration and Maintenance Plan.

## Indiana 8 Hour Non-Attainment and Maintenance Area Classifications

In 1997, EPA promulgated changes to the NAAQS. They modified the ozone standard from the "1-hour standard" to what is now called the "8-hour standard." They also added a smaller particulate matter size (PM<sub>2.5</sub>) to the list of criteria pollutants. These changes were challenged in court and were eventually upheld in 2001. As of June 15, 2004, 474 counties in the U.S. were designated "non-attainment" for the new 8-hour ozone standard. Designations for the new PM<sub>2.5</sub> standard are expected to be determined in November of 2004 and made effective in February of 2005.

Depending on the severity of the ozone level under the 8-hour and the 1-hour standards, areas fall under *subpart 1* or *subpart 2* of the CAAA. Areas under *subpart 1* are called Basic, and areas under *subpart 2* are classified according to the ozone level under the 8-hour standard. Numerous areas in Indiana originally fell within the Basic category, and more severe areas fell under subpart 2 and were classified either Marginal or Moderate. Classifications of Serious, Severe and Extreme are also possible, but no areas in Indiana met these ozone levels. Some areas in Indiana were still non-attainment or maintenance areas under the 1-hour standard. These conditions determine the schedules, control measures and conformity methodology required for each area. The CAA specifies some of the schedule and control measures required for specific classifications when the 1990 amendments were enacted. However, the CAAA does not describe how to transition from the 1-hour standard to the 8-hour standard nor what the specific requirements are under the above classifications for the 8-hour standard. EPA and FHWA have promulgated rules regarding this transition by making some modifications to the Transportation Conformity rule and promulgating Phase 1 of the Implementation rule which describes the designations. However, EPA has yet to describe what measures will be required for each classification. This rule is expected in late 2004. **Figure 5-2** describes the different area classifications and some of their requirements.

**Figure 5-2**

Transportation Provisions of the Clean Air Act.  
For 8 Hour Ozone Non-Attainment and Maintenance Area Classifications

<p><b>Basic</b></p> <ul style="list-style-type: none"> <li>• <i>These areas meet or exceed the 8-hour ozone standard of 85 parts per billion (ppb) by less than 15 percent and did not exceed the 1-hour standard after the 2003 season. These areas are required to attain the standard within five years of enactment, specifically June 15, 2009.</i></li> <li>• <i>Attainment State Implementation Plans (SIP) are due June 15, 2007 describing the measures that each area will take to bring the area into attainment by the deadline. These Attainment SIPs will also establish Mobile Source Emissions Budgets.</i></li> </ul>
<p><b>Marginal</b></p> <ul style="list-style-type: none"> <li>• <i>These areas meet or exceed the 8-hour ozone standard of 85 parts per billion (ppb) by less than 15 percent and exceeded the 1-hour standard after the 2003 season. Marginal areas could be "bumped down" from Moderate to Marginal after a showing that they could meet the standard within the Marginal timeframe. These areas are required to attain the standard within three years of enactment, specifically June 15, 2007.</i></li> <li>• <i>These areas will be reclassified as moderate non-attainment areas if they fail to attain the standard by the deadline, plus up to two one-year extensions.</i></li> </ul>
<p><b>Moderate</b></p> <ul style="list-style-type: none"> <li>• <i>These areas meet or exceed the standard by 15 percent to 33 percent (92 ppb to 107 ppb), and are required to attain the standard in six years, specifically June 15, 2010. Moderate areas must meet marginal requirements.</i></li> <li>• <i>Contingency measures to be implemented if the area fails to make reasonable further progress or attain the National Ambient Air Quality Standard (NAAQS) by the attainment date; these measures are to be included in the SIP and are to take effect without further action by the State or EPA.</i></li> </ul>

- *These areas will be reclassified as a serious non-attainment area if they fail to attain the standard by the deadline, plus up to two (2) one-year available extensions.*

Phase II of the Implementation Plan will determine other mandatory controls. Below are two controls that were mandatory under the 1-hour standard for Moderate areas:

- *Basic I/M programs.*
- *In addition to meeting marginal area requirements, moderate areas were required to submit SIP revisions demonstrating volatile organic compound (VOC) reductions, and a 15% reduction from the baseline-year emissions.*

## Indiana 8 Hour Ozone Non-Attainment and Maintenance Area's

Under the new 8 hour non-attainment designations, Indiana now has one Moderate non-attainment area, one Marginal non-attainment area, and ten Basic non-attainment areas for ozone. Of the ten areas identified as Basic non-attainment, five have been identified with the potential to be reclassified as Maintenance after meeting the standard in the 2004 ozone season. A Maintenance designation means the area is now in attainment, but must continue to meet the conformity requirements for the next twenty years.

**Maintenance Areas:** The five areas that will petition for reclassification from *Basic* to a *Maintenance* status are Vanderburgh and Warrick counties (Evansville), Jackson County, Greene County, and Vigo County (Terre Haute) and Delaware County (Muncie). Under the CAAA, Maintenance areas are required to have the following:

- *Maintenance Plan – IDEM will calculate and submit a Motor Vehicle Emissions Budget (MVEB) for a year at least 10 years from EPA's redesignation of the area. This inventory should indicate that the total emissions from all sources have not exceeded the emissions of the year it attained the standard. Likewise, Conformity analyses of future years cannot exceed this budget.*

**Marginal Areas:** LaPorte County has been "bumped-down" from Moderate to a Marginal Non-Attainment. Marginal non-attainment areas are expected to be below the standard without the need for an Attainment State Implementation Plan. Areas that go below the standard by or before the attainment deadline can immediately petition for redesignation. This requires submission of a Maintenance Plan by IDEM as described above. If the area remains above the standard at the 3-year deadline, they may petition for an extension under certain conditions or may be bumped up to Moderate, thus requiring an Attainment SIP. In either case, IDEM will be submitting a Motor Vehicle Emissions Budget (MVEB) to which future-year Conformity analyses must stay within. However, this budget will not be calculated until 2007 or after. In the meantime, FHWA and EPA have modified the Conformity Rule and provided guidance that describes an interim conformity tests. Marginal areas are required to have the following:

- *Transportation Conformity/Interim Conformity Test: Interim Conformity tests include (1) the Build-no-greater-than-no-build, and/or (2) the No-greater than 2002 baseline test. The first proves that building the planned infrastructure does not worsen the emissions than if it was not built, the second test basically sets the emission budget to the 2002 mobile source emissions.*



Conformity guidelines require that without an approved MVEB, one or both of these tests must be done to satisfy the conformity requirements for Transportation Plans (TP) and Transportation Improvement Plans (TIP). All TPs and TIPs of 8-hour non-attainment or maintenance areas must have a Conformity Determination by June 15, 2004 to avoid lapsing. Areas that have a 1-hour budget must continue to use that budget for that same area.

**Basic Areas:** The Basic non-attainment areas in Indiana that have not yet attained the standard are the following counties: St. Joseph, Elkhart, Allen, Delaware, Madison, Hamilton, Boone, Hendricks, Morgan, Shelby, Hancock, Marion, Clark and Floyd. St Joseph, Elkhart, Marion, Clark and Floyd have 1-hour budgets. Basic areas are required to have the following:

- *Transportation Conformity Test - will be determined using one of the interim tests of either (1) Build-No-Build Greater than No Build or (2) No-greater than 2002 Baseline test. Some of the areas will have existing 1-hour budgets they must meet. These areas are not expected to have 8-hour budgets from approved SIPs until 2007 or until they drop below the standard and a Maintenance Plan is submitted and approved.*

**Moderate Areas:** Indiana's air quality Moderate non-attainment area under the new 8-hour standard is Northwest Indiana, which includes Lake and Porter counties. Both of these counties have existing 1-hour budgets. Moderate non-attainment areas must meet the following:

- *Transportation Conformity Test: Under the new Conformity rules, Moderate areas have to perform both interim tests. However, this entire area has a 1-hour budget, so there is no area requiring the interim tests.*
- *Volatile Organic Compound Reduction Plan – this may be necessary depending on Phase II of the Implementation Rule.*
- *Inspection and Maintenance – This already exists in the area. Phase II of the Implementation Rule will address this.*
- *Attainment Demonstration and Maintenance Plan – this area will rely on its 1-hour budgets until the 8-hour Attainment SIP is completed or the area drops below the standard before the 2010 deadline and a Maintenance Plan is submitted and approved.*

## Indiana PM 2.5 Non-Attainment Area's

As mentioned earlier, In 1997 EPA promulgated changes to the NAAQS. In addition to modifying the ozone standard from the 1-hour standard to the 8-hour standard they also added a smaller Particulate Matter (PM) size to the list of criteria pollutants. EPA revised the primary PM 10.0 standard by adding a new annual PM 2.5 standard (2.5 micrometers in diameter or smaller) set at 15 micrograms per cubic meter and a new 24 hour PM 2.5 standard set at 65 micrograms per cubic meter. However, as of the printing of this document, EPA has not formally designated the PM 2.5 non-attainment counties in Indiana nor set the final promulgated rules regarding the requirements for meeting the new standard. EPA has identified Indiana counties they initially propose for PM 2.5 non-attainment but the final designations for the new PM2.5 standard are expected to be formally be determined in November of 2004 and made effective in February of 2005.

**Figure 5-3**



## Summary

The Indiana Department of Transportation faces many challenges in successfully meeting the transportation needs of the State of Indiana while simultaneously achieving air quality goals. Numerous projects in the 2030 Long Range Plan project list must pass air quality standards prior to implementation. Therefore, some projects in the current listing may not be achievable due to air quality issues. A multimodal transportation planning process focused on adherence to the air quality provisions of ISTEA, CAAA, and TEA-21 will help INDOT meet our responsibility to provide improved mobility, enhanced quality of life, and economic vitality goals for all Indiana residents.